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The Negative Consequences of Alcohol Consumption and the Analysis of Variables that Can Affect or Reduce Alcohol Consumption

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THE NEGATIVE CONSEQUENCES OF ALCOHOL CONSUMPTION AND THE ANALYSIS OF VARIABLES THAT CAN AFFECT OR REDUCE ALCOHOL CONSUMPTION

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ABSTRACT

Alcoholic beverages are consumed all over the world and have been consumed for centuries. The excessive consumption of alcohol many times results in negative consequences. These consequences not only can affect the individual consuming the alcohol, but also others around them. This research looks at some of the negative medical consequences that can develop from an individual consuming alcohol excessively. The cost of an average hospital stay for an individual with liver cirrhosis, liver cancer, and esophageal cancer was analyzed along with the opportunity cost for the wages that would be lost if an individual could not attend his place of employment due to his hospital stay. The results show that on average the cost of one hospital stay in 2005 for one of the tested health related conditions can be between 18%-30% of the average annual income if a person has health insurance. If an individual is without health insurance the cost of a hospital stay can be between 92%-140%. These results show that developing any alcohol related health conditions can be extremely costly for an individual. Next the research conducted three OLS log-linear regressions to determine which factors have the most effect in reducing alcohol consumption. It was determined that marital status, economic factors such as taxes and income, and alcohol control laws that regulate the availability of alcohol were the most successful and consistent in affecting the demand and consumption of alcohol. This would allow us to infer that the most effective means in reducing the consumption of alcohol would be the efficient use of economic variables and alcohol control laws. Reducing alcohol consumption could also indirectly reduce the negative associated consequences.

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INTRODUCTION

The consumption and abuse of alcohol and its many negative effects have been a topic of debate for decades in the United States and other parts of the world. The excessive consumption of alcohol has many negative effects on different levels. The World Bank reports that on a global level, alcohol abuse is responsible for a total of 4% of all deaths and disabilities throughout the world (Alcohol). The negative consequences of alcohol consumption can have direct individual effects or affect the community and society as a whole.

Effects of Excessive Alcohol Consumption on the Individual

There are several aspects of an individual's life that can be negatively affected by the abuse of alcohol. Health complications often occur from the abuse of alcohol by an individual. Excessive alcohol consumption can contribute to a list of health problems such as liver cirrhosis, pancreatitis, various cancers, and mental disorders (Quick Stats Quick Information of Alcohol Use and Health). Many of these problems can lead to a decreased quality of life, the need for extensive medical care, or even death. An individual can also be subject to health related problems through excessive alcohol consumption when they are involved in motor vehicle and other types of accidents related to impairment loss caused by the intake of alcohol. Many times the individuals are seriously injured or even killed (Quick Stats Quick Information of Alcohol Use and Health).

Excessive alcohol consumption has also been linked to family and social interaction problems. The intoxication level of a person increases the probability that the

individual will become very violent and abusive towards his or her family members and others around them. A study showed that in 2003 26% of domestic violence cases researched in Zurich, New Zealand were due to the alcoholic intoxication of one of the parties involved. In addition, individuals involved in excessive alcohol consumption often neglect their responsibilities and fail to fulfill their roles in their family, social, or employment networks adequately. If one is a parent or caregiver whom is suffering from alcohol abuse, they often lose the ability to perform the necessary duties and make reasonable decisions for the individuals whom are under their direct care. Not only can excessive alcohol consumption affect the performance of an individual at home but it can also reduce a person's productivity in their (World Health Organization Department of Mental Health and Substance Abuse 59-64) workplace. Reduced productivity in a workplace can cause job loss and unemployment.

The excessive consumption of alcohol can also have financial consequences for an individual. Alcohol consumption can be a rather costly pastime (World Health Organization Department of Mental Health and Substance Abuse 59-64). Purchasing alcohol in social settings such as bars, restaurants, and night clubs can also be just as if not more expensive as purchasing alcohol from a retail outlet. Purchasing alcohol from any source in small quantities and infrequently have less or minimal damaging effects on the financial situation of an individual. We begin to see negative financial consequences when a larger percentage of a person's monetary resources are used on alcoholic purchases, because they are frequent buyers and consumers of alcohol and or they buy large quantities at a single time. The frequent purchase of alcohol can reduce the money

available to purchase and fund other life necessities such as food, housing, and transportation. If the individual is part of family unit the financial burden will be felt by everyone and others may suffer. Financial burden can also occur due to unemployment or loss of a job, which has already been mentioned. The lack of employment significantly reduces or completely eliminates an individual's income.

The previous mentioned negative consequences of excessive alcohol consumption are just a few of the long list of effects that can occur. These effects are usually not seen when alcohol is consumed responsibly and in moderation. Many of the previous mentioned consequences of alcohol abuse not only affect the individual consuming alcohol, but there are often indirect effects that are felt by others around them.

Effects of Alcohol Consumption on the Community and Society

The negative consequences of excessive alcohol consumption unfortunately are not confined to affecting only the individual whom chooses to participate in such activities. The effects of alcohol abuse often times can cause harm and danger to other individuals in society and can also place an economic burden on the local, state, and federal government along with other citizens. The negative consequences are called externalities.

Motor vehicle accidents that involve intoxicated drivers can have negative medical and financial effects on others and the community. When an alcohol related motor vehicle accident occurs the intoxicated driver is many times not the only person injured or kill. When these alcohol related accidents occur the injured individuals can accumulate large medical expenses that are paid by insurance companies (automobile or

health), out of pocket, or absorbed by the government through state funded medical plans or state funded hospitals and medical facilities.

Alcohol related motor vehicle accidents also create additional cost or externalities for the government and community, because of the resources needed to handle and manage a traffic accident. When a traffic accident occurs the effort and time of law enforcement officers along with other government provided resources are used to facilitate the investigation of the accident, and assist victims. This creates financial cost and opportunity cost for the community. The money used to support law enforcement agencies is a direct expenditure of the government and taxes collected from individuals within the community. The larger number of incidents of motor vehicle accidents, especially those involving intoxicated drivers creates additional need for law enforcement officers and other resources. This increases the total law enforcement budget expenditure for the government which can increase the dollar amount of taxes collected from the citizens. In addition when law enforcement officers are used to handle and process the scene of a traffic accident it reduces the time and effort that they could use to perform their other duties such as patrolling and monitoring their jurisdictions and attending to criminal acts.

The medical mental and health problems that can develop from excessive alcohol consumption can also be a financial drain on the state and local governments when the inflicted individual does not possess private health insurance or have the financial means to pay for their medical treatments. Their medical treatment is paid for either directly by government funded public health insurance, if they are eligible or the government pays

for their treatments indirectly by funding state run hospitals and facilities where the person can receive necessary medical attention. Individuals suffering from alcohol dependency due to excessive consumption may voluntarily or involuntarily be admitted to substance abuse treatment centers in an attempt to eliminate their addiction to alcohol. Many of these treatment centers are subsidized by local and state governments. The financial support needed to treat the health and mental conditions that can develop from the abuse of alcohol on individual users are absorbed many times by the state and local governments. When this occurs, alcohol abuse is no longer just a financial drain on the person consuming the excessive amounts of alcohol but instead numerous cases of negative externalities are seen throughout society and the economy.

Influential Factors of Alcohol Consumption

The list of negative consequences that can occur due to excessive consumption of alcohol can be exponential. Many of the stated reasons along with others were the cause of Prohibition, the implementation of the 18th Amendment, in the United States in the 1920's. Supporters believed that by imposing an amendment that made the production and sale of liquor illegal would reduce the occurrence of negative violent behavior and increase the productivity of workers. The law was repealed in 1933 due to strong opposition and open disregard (Rapczynski and Zywocinski). The negative effects of alcohol consumption had not disappeared and efforts still had to be made to reduce alcohol consumption which would reduce the negative effects. Many laws have been implemented in the history of the United States and other countries to combat the alcohol problem. For example, to reduce the number of young people from being harmed or

killed in alcohol related motor vehicle accidents, the United States Federal government mandated the legal drinking age of all states to be 21, in 1984 (Minimum Legal Drinking Age). There are also laws that put restrictions on alcohol advertisements and the distribution of alcohol (which is usually determined on a state level). The blood alcohol content level, which was lowered federally to 0.08 in 2000, tells us at what level a person can legally be considered intoxicated which makes it illegal for them to operate a motor vehicle (National Highway Traffic Safety Administration 1-4). The implementation of such laws is under the assumption that there is a negative correlation between the amount of alcohol consumed by an individual and the presence of laws that puts restrictions on alcohol sales and levels of intoxication when performing certain activities. The laws are used in an attempt to control alcohol consumption. A linear model would define it as:

$$Alcohol\ Consumption_i = \alpha - \beta(alcohol\ laws) + \varepsilon$$

State and local governments have also attempted to control excessive alcohol consumption by using various pricing mechanisms. The state and local governments believe that the demand for alcohol is price elastic and therefore if they are able to increase the price of alcohol the demand for alcohol should decrease. They have used spirit, wine, and beer taxes in an attempt to increase the nominal price of alcoholic beverages with the intentions to reduce the demand and sale of alcohol. This means that:

$$Alcohol_{price} = Sale\ price(1 + Alcohol\ tax)\ and$$

$$E_d = \partial ln(Alcohol_{quantity}) / \partial ln(Alcohol_{price})\ where\ |E_d| > 1$$

Even with the existence of government mandated laws and pricing mechanisms in place to deter the excessive consumption of alcohol, there are still other factors that can

be linked to a person's decision to consume. Many people believe that certain demographic characteristics have the potential to increase or decrease the demand of alcohol for an individual. Some of these characteristics include gender, race, geographic location, and religious affiliations. There is also the assumption that there are some individual economic factors that can influence the amount of alcohol consumed by an individual such as their level of income and employment status. Under the assumption that alcohol is a normal good, we should observe that individuals with higher levels of income will demand or consume higher quantities of alcohol. We can also relate this directly to their employment status, because if an individual is unemployed their income will likely be very low if not zero and these individuals should demand and consume less alcohol. We see the linear equation as:

$$Alcohol\ Consumption_i = \alpha + \beta(gender_i) + \gamma(race_i) + \delta(geography_i) + \eta(religion_i) + \theta(income_i) + \lambda(employment_i) + \varepsilon$$

Acknowledging the harmful negative effects of excessive alcohol consumption, it is important to determine which factors truly reduce the demand for alcohol. This paper will look at various government regulations, pricing mechanisms, demographic characteristics, and economic factors to determine which have the most influence in the level of alcohol consumption. In order to show how costly the negative consequences of alcohol consumption can be, a cost analysis of a sample group of alcohol related health conditions was performed.

LITERATURE REVIEW

Health Effects and Alcohol

Throughout history alcohol has been idolized by some cultures as an important social mechanism. In contrast there are many cultures especially religious sects that have been in strong opposition to alcohol and the negative social and health effects that it creates. An article written in 2005 by Robert Room, Thomas Babor, and Jurgen Rehm addressed the health effects of alcohol consumption. It stated that medical studies have shown that there are 60 different medical illnesses that can be related to the consumption of alcohol. Many of these illnesses have high incidents of death (Babor, Rehm, and Room 519-530). Below Table 1 shows a list of eight conditions that are hazardous to the health of individuals as well as the percentage of cases seen worldwide that can be directly related to the consumption of alcohol.

Table 1 Health Conditions Related to Alcohol Consumption

	Total Percentage World Wide
Mouth and pharynx cancers	19%
Esophageal cancer	29%
Liver cancer	25%
Breast cancer	7%
Cirrhosis of the liver	32%
Ischemic heart disease	2%
Motor vehicle accidents	20%
Homicide	24%
(Babor, Rehm, and Room 519-530)	

The researchers specifically studied three of the listed health conditions to investigate the relationship between alcohol consumption and their occurrence. From their research they were able to conclude that there was a linear relationship between the risk of breast cancer and the consumption of alcohol. They examined the results of research from six past studies and determined that the intake of 10 grams of pure alcohol per day increased the risk of breast cancer by 6%. Ten grams of alcohol is equivalent to approximately 0.35 ounces and there is on average 0.60 ounces of alcohol in a single 12 ounce bottle of beer such as Budweiser. This tells us that on average if a woman consumed a little less than one beer daily it increased their risk of breast cancer by 6%. If consumption was increased to 30-60 grams of alcohol per day, which is approximately 1.06-2.12 ounces and is equivalent to approximately 2-3 ½ Budweiser beers, the risk of breast cancer grew by 41%. Next they studied the relationship between alcohol and coronary heart disease. Many studies have been conducted and determined that small quantities of alcohol may actually be beneficial to the condition of the heart. Room, Babor, and Rehm were able to come to similar conclusions. They compared the coronary heart disease mortality and incidence rate of non-alcoholic drinkers to individuals with low to moderate consumption. The researchers found that the lowest risk of coronary heart disease was among the group of low to moderate consumers of alcohol whom consumed an average of 20 grams of alcohol per day (slightly more than one beer) when compared to non-drinkers. When they looked at the relationship with non-alcoholic drinkers and heavy drinkers, those that consumed an average of 70 grams or higher of

alcohol (exceeding 4 beers) per day had a greater risk of coronary heart disease than non-alcoholic drinkers (Babor, Rehm, and Room 519-530).

The researchers not only examined the effect of alcohol on individual health conditions, but they also looked at the burden that countries experience due to negative alcohol related medical conditions. In the poorest developing countries, alcohol was related to 1.3% of negative health incidents and in developed formerly socialist countries the percentage rises to 12.1%. In other developed countries (North American, Western Europe, Japan and Australia) the alcohol related medical condition burden is 6.8%. Globally, alcohol related medical conditions are responsible for 4% of all negative medical incidents (Babor, Rehm, and Room 519-530).

Demographic and Social Effects on Alcohol Consumption

We have seen from past research that there are some medical conditions that can be directly related to the consumption of alcohol. These types of results along with others that relate alcohol consumption to other negative effects on an individual and society encourage further research to determine which variables or factors influence alcohol consumption. Some past research has been conducted to determine if demographic and social characteristics are determinants in the consumption of alcohol.

Martin Bobak, Martin Mckee, Richard Rose, and Michael Marmot used sample data of the Russian population from the 1996 6th New Russia Barometer Survey. They used a cross-sectional survey that collected data on the frequency of alcohol drinking, the average amount consumed on one occasion, and a range of social, demographic, and economic factors. Among the different variables, the researchers studied marital status

and the effects on the frequency of alcohol consumption. They found that among men the variable for being a widow was statistically significant at an alpha level of 0.05. The odds ratio for widowed men of 0.35 tells us that they are less likely than married men to consume alcohol more frequently. For women the odds ratio for being a widow was statistically significant at a 0.01 alpha level. The odds ratio of 0.12 also tells us that widowed women are less likely to be frequent consumers of alcohol compared to married women. The variable for single/divorced was not significant for men nor women (Bobak, Marmot, Mckee, and Rose 857-866).

Economic Factors Effects on Alcohol Consumption

Alcohol consumption has also been shown to be affected by numerous economic factors. Some believe that the pricing of alcohol, income level, and employment status can have strong effects on alcohol consumption. *The Journal of Consumer Research* published an article by Stanley Ornstein and Dominique Hanssens (1985) that investigated the impact of various economic, socio-demographic, and regulatory controls on the consumption of alcohol. They analyzed cross state data of the United States from 1974-1978 using a log ordinary least squares regression. Alcohol consumption per capita was used as the dependent variable. It is measured in gallons of total alcohol consumed. Two of the economic explanatory variables used were real price and real income per capita. The researchers found that the variables real price and real income per capita were statistically significant at an alpha level of .05. The coefficient for real price, which was -.859, which indicated that the demand for alcohol was price elastic, as the price of alcohol increased by 10% the consumption of alcohol per capita in gallons decreased by

8.59%. The variable for real income per capita was found to have the complete opposite effect. The variable had a positive coefficient of .555. It indicates that as income increased by 10% alcohol consumption in gallons per capita increased by 5.5% (Hanssens and Ornstein 200-213).

The study conducted which used sample data from the Russian population by Bobak, Mckee, Rose, and Marmot also looked at other economic factors such as unemployment. Their study found that in men, unemployment was a statistically significant factor in increased alcohol consumption. The odds ratio for men that were unemployed was 1.93 compared to 1.0 for employed men. This tells us that the men who are unemployed are more likely to drink alcohol more frequently than those men whom are employed. When the test was conducted for employed women versus unemployed women the variable for unemployment was shown not to be statistically insignificant (Bobak, Marmot, Mckee, and Rose 857-866).

Economists, Dr. Frank Chaloupka, Dr. Michael Grossman, and Dr. Henry Saffer, wrote an article in 2002 that focused on the effects of alcohol consumption in young people. Much of their research and conclusions for this particular article were drawn from previous studies that had been conducted. During their research, the economist looked at studies that used aggregate data to determine a relationship between alcohol consumption and the price of alcohol. They concluded that the price elasticity of demand for beer was -0.3, the elasticity for wine was -1.0, and the price elasticity of demand for spirits was -1.5. All of the values for elasticity were negative, which shows that there is an inverse relationship with price and the demand for all forms of alcohol. The exact

measurement of alcohol consumption was not indicated in the article, but if we looked at the elasticity of beer for example, it implied that a 3% increase in the price of beer will decrease alcohol consumption by 10%. Chaloupka, Grossman, and Saffer also stated in the article that they believed that they would see even more responsiveness of alcohol consumption to the changes in price if data was collected on an individual basis. The researches felt that the effect of price on alcohol consumption would differ between individuals in different age groups (Chaloupka, Grossman, and Saffer 22-34).

Alcohol Control Laws on Alcohol Consumption

The effectiveness of laws and regulations used to control the consumption of alcohol has been a debate in many countries including the United States. Most people hypothesize that the presence of alcohol control laws that reduce the availability and restrict the sale of alcohol should have an inverse relationship with alcohol consumption. States with alcohol control laws should see less alcohol consumption than those states without the laws or with fewer laws.

The study conducted by Ornstein and Hanssens (1985) that analyzed data from the United States for the years of 1974-1978 also included variables that tested the effect of alcohol control laws on alcohol consumption. They tested dummy variables representing that if a state allowed the sale of alcohol on Sunday, and if a state had a local option law that allowed the cities within their state to decide whether they would allow the sale of alcohol on Sunday. Both of these variables were shown to be not statistically significant in affecting the consumption of alcohol. They used another dummy variable that represented whether a state was a monopoly control state or a license state. This

variable was statistically significant at the alpha level of 0.05. The coefficient was -.116, which demonstrates that if the sale of alcohol is conducted in a state with a monopoly regulated market the consumption of alcohol decreases by 11.6%. The researchers conducted a second test and only included states that were monopoly regulated. The variable for Sunday sales was statistically significant in the second regression with a coefficient of -.081. This implies that in alcohol monopoly run states that do not allow the sale of alcohol on Sunday alcohol consumption decrease by 8.1% (Hanssens and Ornstein 200-213).

A report that examined alcohol consumption and control laws that affected the time availability of alcohol was written, in 1992 by K.L. McLaughlin and A.J. Harrison-Stewart. The research studied data collected in Australia during the 1986 America's Cup yacht races that were held in the city of Fremantle. For six months during the period of the yacht races laws were enacted to relax the alcohol licensing laws. Hotels, taverns, restaurants, nightclubs, and liquor stores within Fremantle were allowed to extend their business hours and sale of alcohol. The researchers were able to test the effect of extended sale hours and availability of alcohol on the consumption of individuals within this area. To determine whether the extended hours had an effect on the amount of alcohol consumed in a week, Pearson Correlations were calculated for the responses of individuals in Fremantle whom answered survey questions six months after the alcohol laws were relaxed. The individuals surveyed were all residents of Fremantle prior to the yacht races and after the yacht races. The relationship of alcohol consumption and late night visits had an r of 0.25 at an alpha level of 0.001, r=0.25 for visits to hotels on

Sunday, and r=0.27 for late night visits to liquor stores. This displays that there is a positive correlation between the amount of alcohol consumed and the extended hours and availability to sell alcohol, although somewhat weak. The results show that the extended hours were correlated with heavier alcohol consumption. This research demonstrates that the relaxation of alcohol laws and increased availability of alcohol had an effect on the level of consumption (Mclaughlin and Harrison-Stewart 409-423).

The research conducted by Mclaughlin and Harrison-Stewart drew very important conclusions. The researchers may have been able to generate even more valuable and relevant conclusions if they could have shown the difference in alcohol consumption during yacht races in 1986 when there was a relaxation of the alcohol regulations and other time periods when the yacht races were present but alcohol regulations were not relaxed. The change in alcohol consumption during the yacht races in 1986 may have not completely been caused by the relaxation of the alcohol regulations. If they were able to look at data that shows alcohol consumption behavior during yacht races with relaxed regulations and without relaxed regulations, they could directly relate the change in alcohol consumption to the relaxation of laws without doubt that other factors relating to the yacht races affected alcohol consumption.

In 2002, *Health Affair* featured an article titled, "The Economics of Alcohol Abuse and Alcohol-Control Policies". It was written by Philip Cook and Michael Moore. The article analyzed past economic research that used empirical research to determine the effects of alcohol control policies on the consumption of alcohol. They determined that policies and regulations that are intended to control or reduce alcohol consumption are

only as effective as their ability to affect the demand or decision of an individual to consume alcohol. The most effective regulations were found to be those that restrict the availability of alcohol to the consumer, because it reduces their utility of alcohol consumption. In order to determine how much restriction is needed to be implemented by an alcohol regulation to reduce or control alcohol consumption, the loss of utility from alcohol consumption to the individual must be weighed versus external social and economic gains from the reduction in alcohol consumption. A successful alcohol regulation reduces the cost and occurrence of negative externalities related to alcohol consumption (Cook and Moore 120-133).

DATA

This research first looked at the cost of treatment related to three major health conditions that are related to excessive alcohol consumption. The three conditions were chosen from the list presented in table one. The three conditions that were analyzed were cirrhosis of the liver, esophageal cancer, and liver cancer. Hospital cost and average length of stay for each medical condition was collected from the United States Department of Health and Human Services for the years 2000-2005. Resources used to collect the data for the regression models testing alcohol consumption were the United States Census Bureau, the National Institute of Alcohol Abuse and Alcoholism, the Tax Foundation organization, and the Alcohol Policy Information System.

The dataset used data from all 50 states including Washington, D.C. for the years 2000-2005. This dataset used total per capita consumption of ethanol measured in gallons for all alcoholic beverages including beer, wine, and spirits as the dependent variable. This variable is being used as a measurement of alcohol consumption. This dataset considers three categories of explanatory variables. The categories are social and demographic characteristics, economic factors, and alcohol control regulations. The alcohol control regulations that were chosen for this model where selected according to their ability to restrict the availability of alcohol to the public. Table 2 lists the explanatory variables according to their separate categories. Table 3 illustrates a summary of statistics for all variables.

Table 2

List of Explanatory Variables

	Explanation of Variables
Social and Demographic	
Female	Percentage of population that is female
White	Percentage of population that is white
Black	Percentage of population that is black
Asian	Percentage of population that is Asian
Married	Percentage of population that is married
Widowed	Percentage of population that is widowed
Divorced	Percentage of population that is divorced
Economic	
Income	Average income of population
Unemployment	Unemployment rate
Beer tax	Dollars per gallon of tax on the sale of beer
Spirit tax	Dollars per gallon of tax on the sale of spirits
Cigarette tax	Cents per pack of tax on the sale of cigarettes
Alcohol Control Laws	
ABC	Dummy variable that indicates if a state is an alcohol monopoly control state, also known as **A**lcohol **B**everage **C**ontrol
Sunday Sales	Dummy variable that indicates if a state does not allow the sale of alcohol on Sunday
Low Alcohol	Dummy variable that indicates if a state only allows the sale of alcoholic beverages on Sunday that contain less than or equal to 3.2% total alcohol
Local Option	Dummy variable that indicates if a state has the option for cities to decide whether they will allow the sale of alcohol on Sunday

Table 3

Summary of Statistics

Explanatory Variables	Observations	Mean	Std. Dev.	Min	Max
Social/Demographic					
Female	306	50.77	2.17	47.78	85.88
White	306	75.35	15.76	23	96.8
Black	306	10.74	11.53	0.12	61.91
Asian	306	3.16	5.8	0.34	42.76
Married	306	44.52	2.99	24.78	48.84
Widowed	306	4.84	0.78	2.32	6.88
Divorced	306	7.81	1.42	4.96	11.2
Economic					
Income	306	35197.33	6730.79	24264	66677
Unemployment	306	4.87	1.19	2	11.5
Beer tax	306	0.24	0.18	0.02	0.93
Spirit tax	306	5.19	4.32	0	21.15
Cigarette tax	306	56.2	42.76	2.5	246
Alcohol Control Laws					
ABC	306	0.34	0.47	0	1
Sunday sales	306	0.193	0.4	0	1
Low alcohol	306	0.08	0.27	0	1
Local option	306	0.167	0.37	0	1

In the demographic category not all individuals are accounted for under the three race variables White, Black, and Asian. All individuals that did not specifically fit into one of these race categories have been excluded. This may include Native Americans, any Hispanics whom do not identify themselves as White or Black, and individuals that claim more than one race. In the social/demographic category there are also variables that represent marital status. The variable representing the percentage of the population that is single has been excluded from the tested model. The variable cigarette tax is used as an economic variable, because of its complimentary relationship to alcohol. It is believed that often when individuals consume alcohol, cigarettes are also used. The

variable is testing whether a change in the price of cigarettes, which should affect the demand for cigarettes, will also affect the demand for alcohol. Table 4 shows a list of the states that are alcohol monopoly controlled states and considered Alcohol Beverage Control states in each year. The states are grouped according to their regions.

Table 4

Alcohol Beverage Control States

	2000	2001	2002	2003	2004	2005
North East						
	Maine	Maine	Maine	Maine	Maine	Maine
	New Hampshire	New Hampshire	New Hampshire	New Hampshire	New Hampshire	New Hampshire
	Pennsylvania	Pennsylvania	Pennsylvania	Pennsylvania	Pennsylvania	Pennsylvania
	Vermont	Vermont	Vermont	Vermont	Vermont	Vermont
South						
	Alabama	Alabama	Alabama	Alabama	Alabama	Alabama
	Mississippi	Mississippi	Mississippi	Mississippi	Mississippi	Mississippi
	North Carolina	North Carolina	North Carolina	North Carolina	North Carolina	North Carolina
	Virginia	Virginia	Virginia	Virginia	Virginia	Virginia
	West Virginia	West Virginia	West Virginia	West Virginia	West Virginia	West Virginia
Midwest						
	Iowa	Iowa	Iowa	Iowa	Iowa	Iowa
	Michigan	Ohio	Ohio	Ohio	Michigan	Michigan
	Ohio				Ohio	Ohio
West						
	Idaho	Idaho	Idaho	Idaho	Idaho	Idaho
	Montana	Montana	Montana	Montana	Montana	Montana
	Utah	Utah	Utah	Utah	Utah	Utah
	Washington	Washington	Washington	Wyoming	Washington	Washington
	Wyoming	Wyoming	Wyoming	Oregon	Wyoming	Wyoming
		Oregon	Oregon		Oregon	Oregon

METHODS

The research conducted for this paper had two main goals. The first goal was to look at the cost associated with the negative effects of alcohol consumption. A cost analysis was conducted in order to observe such effects. The cost of medical care was chosen due to its effect on the individual person and the cost burden that can be placed on the government. A cost-analysis was conducted to evaluate the total cost of cirrhosis of the liver, liver cancer, and esophageal cancer for the years 2000-2005. Using a database from the United States Department of Health and Human Services the average cost of a hospital visit per patient for each health condition for all studied years was calculated. In addition to the cost directly generated from a stay in the hospital there are additional opportunity cost associated with the time spent in the hospital. One opportunity cost is the dollar amount in wages that is lost due to an individual's inability to attend work because the person is confined to the hospital. The opportunity cost in relationship to lost wages was calculated using the average daily wage for each year, which was derived from the reported average yearly wages on the United State Census department website. There may be additional wages lost to days spent at home after recovering from a hospital stay. Unfortunately the average number of days it takes to recover from a hospital stay at home for each of these health conditions is not data that has been collected or reported. In addition to the opportunity cost related to lost wages, there are other costs that can be considered, but were not investigated in this research.

The average cost for each hospital stay was added with the average opportunity cost to obtain the average total cost to hospital admittance of an individual with an

alcohol related disease. The data was also used to calculate the percentage of average annual income that the cost of a hospital stay would include. The results for this cost-analysis can be seen in Table 4.

The second goal of this research was to look at the relationship between alcohol consumption and social/demographic characteristics, economic factors, and alcohol control laws. Data for this analysis is described in Table 4. The second tested hypothesis is that the social/demographic characteristics, economic factors, and alcohol control laws, will all have an effect on the consumption of alcohol.

Ho: $\beta_{SD}=0,\beta_{E}=0,\beta_{ACL}$

Ha: At least one does not equal 0

To test this hypothesis a robust log-linear OLS regression model was used to determine if each of the independent variables would have an effect on alcohol consumption. The purpose of this regression was also to determine which category of variables would have the largest effect on alcohol consumption. The results of this model are recorded in Table 5. The regression model is stated below.

$\text{Log}(\textit{Alcohol Consumption})=\beta_{o}+\beta s_{D}+\beta_{E}+\beta_{ACL}+\varepsilon$

In monopoly controlled states, there are many strict guidelines and restrictions on the sale of alcohol that are not specifically stated in this research, but in order to determine if the other variables may have a different impact on strictly monopoly controlled states and their consumption of alcohol two additional robust log-linear OLS regression models were conducted. The second model controlled for states that were Alcohol Beverage Control States and the results can be seen in Table 6. The third

regression controlled for all states that were not Alcohol Beverage Control States and the results can be seen in Table 7.

RESULTS

Cost-Analysis of Health Conditions

Table 5

Cost-Analysis of Hospital Stay for Alcohol-related Health Condition

Health Condition	Avg. # of Days in Hospital	Avg. Hospital Charges	Avg. Wage Per Year	Avg. Wage Per Day	Avg. Amount of Wages Lost	Total Cost	Avg. Percent of Ins. Pmt for Hospital Charges	Avg. Insurance Pmt for Hospital Charges	Avg. Patient Amt Due for Hospital Charges with Insurance	Avg. Percent of Income with Insurance	Avg. Percent of Income without Ins.
2005											
Liver Cirrhosis	6.5	$34,342	$37,929	$141	$916.50	$35,258.50	80%	$28,206.80	$7,051.70	18.59	92.96
Throat Cancer	9.8	$51,727	$37,929	$141	$1,381.80	$53,108.80	80%	$42,487.04	$10,621.76	28.00	140.02
Liver Cancer	7	$41,937	$37,929	$141	$987.00	$42,924.00	80%	$34,339.20	$8,584.80	22.63	113.17
2004											
Liver Cirrhosis	6.3	$30,455	$36,853	$137	$863.10	$31,318.10	80%	$25,054.48	$6,263.62	17.00	84.98
Throat Cancer	10	$46,190	$36,853	$137	$1,370.00	$47,560.00	80%	$38,048.00	$9,512.00	25.81	129.05
Liver Cancer	7.2	$36,684	$36,853	$137	$986.40	$37,670.40	80%	$30,136.32	$7,534.08	20.44	102.22
2003							.				
Liver Cirrhosis	6.6	$32,708	$35,239	$131	$864.60	$33,572.60	80%	$26,858.08	$6,714.52	19.05	95.27
Throat Cancer	10.4	$52,435	$35,239	$131	$1,362.40	$53,797.40	80%	$43,037.92	$10,759.48	30.53	152.66
Liver Cancer	7.1	$37,633	$35,239	$131	$930.10	$38,563.10	80%	$30,850.48	$7,712.62	21.89	109.43
2002											
Liver Cirrhosis	6.7	$27,068	$34,432	$128	$857.60	$27,925.60	80%	$22,340.48	$5,585.12	16.22	81.10
Throat Cancer	10.1	$42,519	$34,432	$128	$1,292.80	$43,811.80	80%	$35,049.44	$8,762.36	25.45	127.24
Liver Cancer	7.2	$32,193	$34,432	$128	$921.60	$33,114.60	80%	$26,491.68	$6,622.92	19.23	96.17
2001											
Liver Cirrhosis	6.7	$23,392	$33,894	$126	$844.20	$24,236.20	80%	$19,388.96	$4,847.24	14.30	71.51
Throat Cancer	10.4	$40,673	$33,894	$126	$1,310.40	$41,983.40	80%	$33,586.72	$8,396.68	24.77	123.87
Liver Cancer	7.1	$25,245	$33,894	$126	$894.60	$26,139.60	80%	$20,911.68	$5,227.92	15.42	77.12
2000											
Liver Cirrhosis	6.7	$22,547	$32,549	$121	$810.70	$23,357.70	80%	$18,686.16	$4,671.54	14.35	71.76
Throat Cancer	10	$33,866	$32,549	$121	$1,210.00	$35,076.00	80%	$28,060.80	$7,015.20	21.55	107.76
Liver Cancer	7.4	$25,356	$32,549	$121	$895.40	$26,251.40	80%	$21,001.12	$5,250.28	16.13	80.65

Table 5 shows that the average days of hospitalization for liver cancer is seven, the average days for esophageal cancer is 10 and the average days for cirrhosis of the liver is close to 7. For individuals in 2005, with health insurance, the cost of a hospital

stay for an alcohol related condition was between approximately 19%-23% of average annual income. The largest percent of income, which is 30.53%, can be seen in 2003 with throat cancer. For individuals without health insurance one hospital stay of an individual diagnosed with throat cancer exceeded total average income in years 2000-2005. Liver Cirrhosis and Liver cancer for each year encompassed at least 70% of average annual income in 2000-2005.

Alcohol Consumption

Table 6

Log-linear OLS Regression

Log Alcohol Consumption		
		r-square 0.446
Explanatory Variables	**Coefficient**	**P-value**
Social/Demographic		
Female	0.000	0.836
White	0.002	0.143
Black	-0.002	0.087*
Asian	-0.001	0.550
Married	-0.021	0.000**
Widowed	-0.044	0.007**
Divorced	0.032	0.000**
Economic		
Income	0.000	0.000**
Unemployment	-0.027	0.001**
Beer tax	0.124	0.078*
Spirit tax	-0.010	0.000**
Cigarette tax	-0.001	0.003**
Alcohol Control Laws		
ABC	-0.036	0.191
Sunday sales prohibited	-0.172	0.000**
Low alcohol	-0.151	0.000**
Local option	-0.064	0.006**
* indicates significant at a 0.10 alpha level ** indicates significant at 0.05 alpha level		

Table 6 illustrates the results of the log linear robust OLS regression testing the dependant variable, alcohol consumption. We can see that in this regression model there are twelve explanatory variables that are statistically significant at the 0.05 alpha level. There are an additional two variables significant at the 0.10 level. The total r-square for this model is 0.446, which indicates that this model explains 44.6% of the total variation in alcohol consumption.

Social and Demographic Variables

There are four variables that are significant in the social and demographic category. The variable representing the percentage of black population is significant at a

0.10 alpha level. This variable has a negative relationship with alcohol consumption. The coefficient indicates that when the black population increases by 10%, alcohol consumption decreases by 2%. When we look at the average alcohol consumption for this total dataset it equals 2.32 gallons of alcohol per capita, therefore if we decrease the consumption by 10%, that is approximately 29.70 ounces and 50 Budweiser beers consumed per capita.

The remaining three variables that are significant in this category all relate to marital status. They are all significant at a 0.05 alpha level. The married and widowed variables have an inverse relationship with alcohol consumption. The married variable indicates that when the percentage of the population that is married increases by one, alcohol consumption decreases by 2.1%, which is approximately 6.27 ounces of alcohol that can be related to 10 beers per capita on average for this dataset. The widowed variable indicates a decrease in alcohol consumption by 4.4% (22 beers per capita) if the percentage of individuals whom are widowed increases by 1%. The variable representing the percent of the population that is divorced had a positive relationship with alcohol consumption, the coefficient implies that when the percentage of the population that is divorced increases by 1% alcohol consumption increases by 3.2%. This translates into an average of 16 Budweiser beers per capita.

Economic Variables

It is apparent from the results in table 6 that all of the tested economic variables are statistically significant in causing variation in alcohol consumption. Two of the variables have a positive relationship with alcohol consumption. The coefficient of the

income variable, which is significant at the 0.05 alpha level confirms that as average income increases by $1000 alcohol consumption increases by 1.07% (an average for this total dataset of 3.18 ounces and 5.3 Budweiser beers per capita). The beer tax variable is significant at the 0.10 alpha level and indicates that when beer taxes increase by $1 per gallon the consumption of alcohol decreases by 14.27% (an average for this total dataset of 42.24 ounces and 70 beers per capita). The four remaining variables have inverse relationships with alcohol consumption. The unemployment, spirit tax, and cigarette tax variables are significant at the 0.05 alpha level. The unemployment coefficient demonstrates that when the unemployment rate increases by one percent, alcohol consumption decreases by 2.66%. The spirit tax coefficient indicates that as the spirit tax increases by $10 per gallon alcohol consumption decreases by 9.1% (45 beers per capita). The cigarette tax coefficient indicates that when cigarette taxes increase by $1 per pack, alcohol consumption decreases by 7.9% (38.4 beers per capita).

Alcohol Control Law Variables

Three of the alcohol control law variables were significant in this regression. They were significant at the alpha level of 0.05 and have an inverse relationship with alcohol consumption. The regulation that does not permit the sale of alcohol on Sunday appears to have the largest effect on alcohol consumption compared to the other two significant variables. The coefficient for the variable indicates that when a state does not allow the sale of alcohol on Sunday, alcohol consumption decreases by 17.18%. This translates to 51.20 ounces for average consumption of alcohol for the dataset used in this model and 85 Budweiser beers per capita. The low alcohol variable has the next largest

coefficient and it suggest that when it is illegal to sale alcohol in greater than 3.2% concentration on Sunday, alcohol consumption decreases by 15.14% (an average of 75 beers per capita). The last significant variable in this group is local option. The local option coefficient indicates that when state governments give the option to local cities and municipalities to decide whether or not alcohol sales is allowed by their retailers on Sunday, alcohol consumption decreases by 6.41% (32 beers per capita).

Alcohol Beverage Control States

Table 7
Log-linear OLS Regression Controlling for ABC States Only

Log Alcohol Consumption		
		r-square 0.533
Explanatory Variables	**Coefficient**	**P-value**
Social/Demographic		
Female	0.003	0.126
White	0.000	0.913
Black	0.000	0.993
Asian	-0.019	0.401
Married	0.005	0.743
Widowed	-0.083	0.008**
Divorced	0.032	0.014**
Economic		
Income	0.000	0.121
Unemployment	-0.023	0.189
Beer tax	-0.075	0.657
Spirit tax	-0.009	0.107
Cigarette tax	0.000	0.784
Alcohol Control Laws		
Sunday sales prohibited	-0.314	0.002**
Low alcohol	-0.415	0.002**
Local option	0.059	0.370
* indicates significant at a 0.10 alpha level ** indicates significant at 0.05 alpha level		

The regression model in Table 7 was conducted controlling for only Alcohol Beverage Control states. The r-square was 0.533, therefore 53.3% of the variation of alcohol consumption is explained in this model for ABC states. These results show that

there were only four statistically significant variables. They were all significant at the 0.05 alpha level. Three of the variables have an inverse relationship with alcohol consumption. The results show that a 1% increase in the population that is widowed decreases alcohol consumption by 8.3% which is on average 42 Budweiser beers per capita. The Sunday sales coefficient indicates that in an Alcohol Beverage Control State that does not allow the sale of alcohol on Sunday, consumption of alcohol reduces by 31.38%, which are 155 Budweiser beers consumed per capita on average for this dataset. The low alcohol variable indicates that when alcohol can only be sold in 3.2% or less concentrations on Sunday in Alcohol Beverage Control States, alcohol consumption decreases by 41.5% (an average of 205 beers per capita). The variable for divorced has a positive relationship with alcohol consumption in this regression model. The divorced coefficient indicates that a one percent increase in the population that is divorced will see an increase of alcohol consumption by 3.2% in an Alcohol Beverage Control state.

Table 8

Log-linear OLS Regression Controlling for Non-ABC only States

Log Alcohol Consumption		
		r-square 0.481
Explanatory Variables	**Coefficient**	**P-value**
Social/Demographic		
Female	-0.003	0.859
White	0.003	0.012**
Black	-0.003	0.027**
Asian	-0.001	0.490
Married	-0.033	0.000**
Widowed	-0.047	0.017**
Divorced	0.018	0.043**
Economic		
Income	0.000	0.000**
Unemployment	-0.023	0.022**
Beer tax	0.252	0.003**
Spirit tax	-0.013	0.010**
Cigarette tax	-0.001	0.024**
Alcohol Control Laws		
Sunday sales prohibited	-0.123	0.000**
Low alcohol	-0.107	0.006**
Local option	-0.066	0.004**
* indicates significant at a 0.10 alpha level ** indicates significant at 0.05 alpha level		

In contrast to the results in table 7, the regression conducted controlling for only non-Alcohol Beverage Control states appeared to have a larger number of significant variables. There were a total of thirteen explanatory variables that were significant in the results of table 8 at the 0.05 alpha level. The social and demographic category had five significant variables at the 0.05 alpha level. The coefficient of the white variable explains that in a non-Alcohol Beverage Control state if the percentage of the white population increases by ten percent, alcohol consumption increases by 3.0% (15 beers per capita). We also learn from the results that if the percentage of the black population increases by 10%, alcohol consumption will decrease by 3.20%. All three of the marital status variables were significant in the third regression. The variables married and

widowed had inverse relationships with alcohol consumption. When the population of widowed individuals increases by 1% alcohol consumption decreases by 4.7% (23 Budweiser beers per capita). A 1% increase in the population that is married will decrease alcohol consumption by 3.3% (an average of 16 beers per capita) in a non-Alcohol Beverage Control state.

In the economic category, once again all variables are statistically significant, and they are all significant at the 0.05 alpha level. The variables for beer tax and income once again have positive relationships with alcohol consumption as seen in table 8. When the average income increases by $10,000 in a non-Alcohol Beverage, alcohol consumption increases by 9.16% an average of 45 beers per capita). The coefficient on the beer tax variable signifies that when beer tax increases by $1 per gallon, alcohol consumption increases by 25.22%. An increase of 25.22% increase in alcohol consumption is approximately 126 Budweiser beers per capita. The remainder of economic variables had inverse relationships with alcohol consumption in non-Alcohol Beverage Control states. When the unemployment rate increases by 1% there is a 2.30% decrease in alcohol consumption. A $1 per gallon increase in spirit tax coincides with a 1.30% decrease in alcohol consumption in non-Alcohol Beverage Control states. The coefficient for cigarette taxes indicates that with a $1 increase in taxes per cigarette tax, alcohol consumption decreases by 7.41% (37 beers per capita).

In the regression model for non-Alcohol Beverage Control states, the variables representing alcohol beverage control laws were all verified to be statistically significant at a 0.05 alpha level. In non-alcohol beverage control states, when the sale of alcohol is

not permitted on Sunday, alcohol consumption decreases by 12.34%, which is an average of 61 Budweiser beers per capita for this dataset. We see a decrease in alcohol consumption also when the state prohibits alcohol to be sold in concentrations over 3.2% on Sunday, and when states give local cities and municipalities the option to decide if alcohol can be sold by retailers in their jurisdictions on Sunday. The decrease of alcohol consumption is 10.75% (53 beers per capita) and 6.60% (32 beers per capita) respectively.

CONCLUSION

In 2005, 16.8% of individuals in the United States did not have private or government sponsored health insurance (United States Census Bureau). These individuals would be responsible for the full hospitalization cost seen in table 4 if they were to develop an unfortunate health condition due to excessive alcohol consumption. Table 4 also demonstrates that the average hospital stay cost for the three health conditions observed are over 70% of annual wages or greater for individuals without health insurance. This can create an extreme financial burden on any individual. This can result in large debt or if they choose not to pay or do not have the ability to pay can create a bad debt for the hospital that provided care. If the hospital is funded by the state or local government the financial lost of the hospital will be absorbed by the government and the taxpayers. Even individuals with health insurance may face responsibility of hospital charges between 15%-30% of average annual income. In addition to the hospital cost and the strain it can place on an individual's income or government expenditures, they may be subject to the lost of wages that are also described in table 4. The total lost to wages for average annual income was between $800-$1400. The cost analysis seen in this research is a small fraction of the potential cost of excessive alcohol consumption due to an alcohol health related condition. There are many other relatable cost, and often individuals may have numerous hospital stays along with additional opportunity cost not stated in this research. The cost analysis and figures presented in this research are a sufficient example of the negative financial consequences of excessive alcohol consumption. The regressions for the data obtained in tables 6-8 were conducted in order

to find relevant explanatory variables that may affect the consumption of alcohol. If alcohol consumption can be reduced, the probability of individuals developing certain alcohol related conditions and the associated cost reduces.

If we are to look at the results of table 6, it would appear that the social demographic variable related to marital status, economic variables, and alcohol control law variables have the largest effect on the variation in alcohol consumption.

The marital status variables were consistently significant in all three regressions. The widowed and married variables had inverse relationships. This may be due to the fact that married individuals may not involve themselves in many social outings or places that involve alcohol such as bars and nightclubs; therefore they may consume less alcohol. Also, married individuals often have families and children whom they are taking care of so they may choose to spend more of their income on family necessities rather than purchasing alcohol. Some parents may even believe that it is improper to consume alcohol around their children, therefore their total alcohol consumption decrease. When we consider the variable widowed, some may believe there is a higher concentration of an older population that makes up that group. We would tend to believe that as one gets older alcohol consumption may decrease. For the effects of the married and widow variables in order to determine why we see the relationships present in these models it would be beneficial to test for other variables such as children and age.

Within the economic category, the income variable was found to be significant and have a positive relationship. These results can be explained by the theory of income elasticity of demand. The theory would label alcohol as a normal good, and therefore as

income increases the demand for alcohol increases which is shown by the positive coefficient that was found for the income variable. In relation to the effect of income we see that the unemployment rate has a negative effect on alcohol consumption. This is logical when we consider that most people whom are unemployed have less income available to them, therefore a state with a higher unemployment rate may have a lower average income. With lower income we know that the demand for alcohol will decrease, which is implied from the income elasticity of demand theory.

The remaining three economic variables were all a measurement of price. Taxes placed on a good will increase the nominal price of a good. Using the tax variables as indicators of price allowed for the testing of price elasticity on alcohol beverage goods and complimentary goods such as cigarettes. Spirits are a type of alcoholic beverage, and the results from table 6 show us that when we see an increase of taxes on spirits, the consumption of alcohol decreases. This effect signals that the demand for alcoholic beverages such as spirits is relatively elastic. In contrast the tax on beer, beer also being an alcoholic beverage, has a positive relationship on alcohol consumption. An explanation to this result may be that as beer taxes increase the total price of beer rises to the price level of other alcoholic beverages, therefore individuals may decide to substitute other alcoholic beverages for beer which increases the total consumption of all alcohol. In this situation the demand for beer is price elastic, and may cause individuals to seek an alternative alcoholic beverage.

The inverse effect of the increase of cigarette taxes may be a result of cigarettes being a complimentary good to alcohol. If the demand for cigarettes is also price elastic,

the demand for cigarettes will decrease as increasing cigarette taxes causes the price of cigarettes to rise. If cigarettes are complimentary to alcoholic beverages the decrease in demand for cigarettes will also cause a decrease in the demand for alcohol.

The three alcohol control law variables that are significant in the results of table 6 all dictate in some manner the availability of alcohol to the consumer on Sundays. The inverse relationship to alcohol consumption that is seen with the variables local option, Sunday sales, and low alcohol is to be expected. Decreasing the number of days that alcohol can be sold or modify the amount that can be sold, consumption of alcohol will automatically decrease, because it is not available for sale. It is interesting to note in table 6 and table 8 we see that the local option variable has an inverse relationship with alcohol consumption. Under the assumption that if local municipalities have the option to sell alcohol consumption if they choose, one would believe that some of them will allow the sale of alcohol on Sunday, and therefore a positive relationship between alcohol consumption and the local option variable should be seen. A positive relationship should occur, because availability of alcohol should increase due to the municipalities allowing the sale of alcohol.

Comparing the two regression models that control for states that are Alcohol Beverage Control and those that are non-monopoly states we see a very different trend in variables that are significant. In Alcohol Beverage Control states the only variables that appear to be significant in affecting alcohol consumption are those related to marital status (widowed and divorced) and alcohol control laws that reduce the accessibility. This may be true due to the fact that in Alcohol Beverage Control states the other

restrictions that are put in place affect everyone in a population equally, and therefore social/demographic variables not related to marital status or economic factors no longer play a role in the demand for alcohol and its consumption. The regulations in place in these monopoly states may dictate alcohol consumption and demand to a great extent. The alcohol control laws are significant, because they too like the restrictions present in Alcohol Beverage Control States determine when alcohol can be sold, which indirectly can dictate when alcohol can be consumed.

In many of the Alcohol Beverage Control states, the taxes collected on alcoholic beverages such as spirits are not specifically collected or added to the purchase of alcohol. Many of these states collect taxes for alcohol in other indirect manners. This may be the cause for the insignificance of economic variables such as beer tax and spirit tax (Tax Data0. We also see from table 4 there is a low concentration of states in each year in the southern and midwest region. We see a higher concentration of Alcohol Beverage Control states in the northern and western regions of the United States. Observing that Alcohol Beverage Control States appear to be grouped in specific areas of the country, there may be social norms related these geographic regions that affect alcohol consumption and reduce the effects of demographic and economic variables. The regression results shown in table 8 that has been controlled for non-Alcohol Beverage Control states had a wider range of significant variables. There is at least one significant variable in each category. In these states there are fewer restrictions put on the sale of alcohol and therefore market and social/demographic factors also have an effect on the demand for alcohol.

Considering the results of the regressions conducted in this research it is apparent that marital status and pricing mechanisms such as taxes, along with other economic factors are successful in altering the demand of alcohol for consumers. Alcohol control laws are also important in reducing alcohol consumption. The pricing mechanisms and alcohol control laws are all factors that can be controlled by the government. If the government takes an active role as it has in the past to increase these types of controls we may see an even greater decrease in the demand for alcohol, which has the potential to reduce the negative consequences such as alcohol related health conditions and the cost that are associated with it.

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